

Vehicle Speed Dome User Manual

BN-5606XCAR



DC 12V

Berneer production

Please read this User Manual carefully to ensure that you can use the device correctly and safely.

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Main Cautions

- Please read this manual carefully before installing
- Comply with all caution items on device & manual
- Comply with all indicated operations as well as manual
- Use components recommended by seller avoiding fault
- This product should use specified power supply & voltage. If practical power supply & voltage is unknown, please ask for seller.
- Do not disassemble body but contact to seller
- With body cleaning do not use strong or grinding detergent.

Use a dry, soft cloth to clean the camera shell when it is dirty. If very dirty, please use neutral detergent rather than strong detergent in order to taken not to scratch the dome when wiping it. Then use dry cloth wiping rest detergent.

- Happen the following faults, please contact with dealer:
 - Power supply and control line destroyed
 - Body fell down or shell destroyed
 - Device performance works abnormal
 - Yet abnormally work after operation according to instruction
- With component replacement, please use those components offered by dealer or performed equally.

Precautions

- Do not direct to sunlight with camera

Do not aim to shining objects with camera. Never aim to sunlight or other strong light objects no matter during operating or not.

- Do not long-time aim to strong light or expose in light source

If equivalent light forms facula, part of image will fade caused by CCD filter worsening under camera face changing.

- **This product standard voltage is DC 12V**

For seldom vehicle power sockets (lighter socket) are DC 24V and improper voltage will damage camera greatly, please ensure power socket (lighter socket) voltage is DC 12V.

1. Preface

Vehicle speed dome is our advanced monitoring product with optical, mechanical and electronic integration. It includes dynamic structure, precision actuator, CCD camera, digital decoder, image processing unit and controller. Machinery structure designs simply and is precise. High precision & reliability; smart operating, high speed, stable start & stop, easy control; multi-object presetting, remember and auto tour; random position, true Omni-bearing & non-blind point monitoring; auto adjust object distance and size to suit ambient brightness, high cost-performance, long-term stable running.

2. Features

- Vehicle environmental designment, anti-shake, waterproof, IP66 protection grade
- Horizontal 360° continuous running, max speed 100°/s.
- Vertical -15° to 90° rotation from which begin to auto flip 180° and continuous monitoring.
- 64 customized presets
- Auto tour function: 0~54 presets orderly switch
- Set max running speed and proportional speed-down, fast call preset positions and manually control precision tracking
- RS485-485 bus-control
- Built-in memory to store the setting data, which can not be lost after power off
- Compatible with various protocols with adjustable baud rate (Pelco-P /Pelco-D/ Kalatel/ Samsun/ AD)
- High-strength plastic shell with light weight
- In installing, suck dome onto vehicle roof by owned magnet, or use three M5 screws mounting dome onto vehicle roof
- DC 12V power supply

3. Function Introduction

The following will introduce main functions of integrated speed dome, as well as various functions operation (no operation details).

- Set address code, baud rate and control protocol

Each command matches with only one camera address code, baud rate and control protocol, single camera only reacts to commands matched to own address code, baud rate and control protocol.

- Motion control

Customer can use keyboard controller to manage camera rotation, tracking motion object or motion sight; besides can change view-angle or image size with adjusting focal length. In auto focus state, as lens moving, camera will according to sight change adjust automatically, getting clear image.

- Focal length / running-speed auto matching

In manual state, for long focal length, slight moving of controller will cause so great changes on image as to data loss. Based on humanity designment, dome according to focal length can auto adjust horizontal / vertical speed, so as to make manual tracking easier.

- Auto flip

If lens is pulled until up to top (vertical 90°), it will auto horizontally turning 180° and then flip downward, which can directly watch backside sight. This process ensures vertical 180° continuous monitoring.

- Set and call preset position

Preset function means that in present state, pan/tilt angle and focal length data stores into memory in order to call and place pan/tilt with camera to specified position. Customer can store and call presets with controller or infrared controller easily. This function supports 64 presets.

- Lens control

- Focal length control

Customer can adjust focal length with controller or matrix so as to get full shot or close-up shot.

- Focus control

In auto focusing & zooming state, camera will focus on picture center to keep picture clear; in special condition, customer can manually focus to get needed effect. Manual focus restores to auto focus only needs shake joystick.

- Aperture control

Customer can manually adjust aperture size with controller to get needed picture brightness. It is also operable to restore auto adjustment by calling a preset position.

- Auto backlight compensation

When backlight compensation opens, camera can auto compensate brightness for dark sight among strong light background. Adjusting background lighting prevents such a brightness mass on screen caused by background brightness as to can not distinguish dark object, so that you can get clear image.

- ATW (auto tracking white)

Automatically adjust according to ambient light changes to reveal true color.

- Auto tour

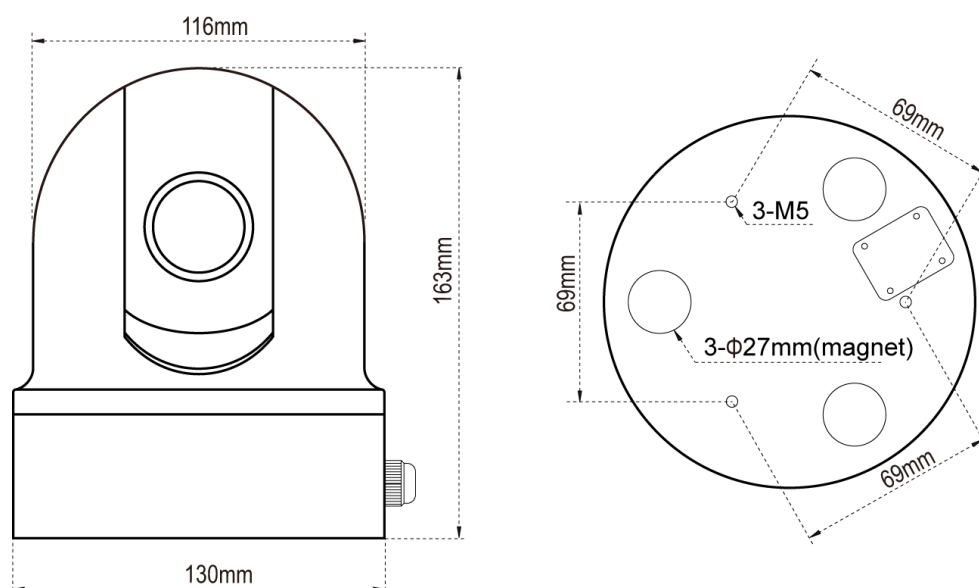
We can beforehand set presets for tour and put them into an ordered queue, a calling command required only for that all points (domes) operate circularly based on certain interval.

- Zone scanning

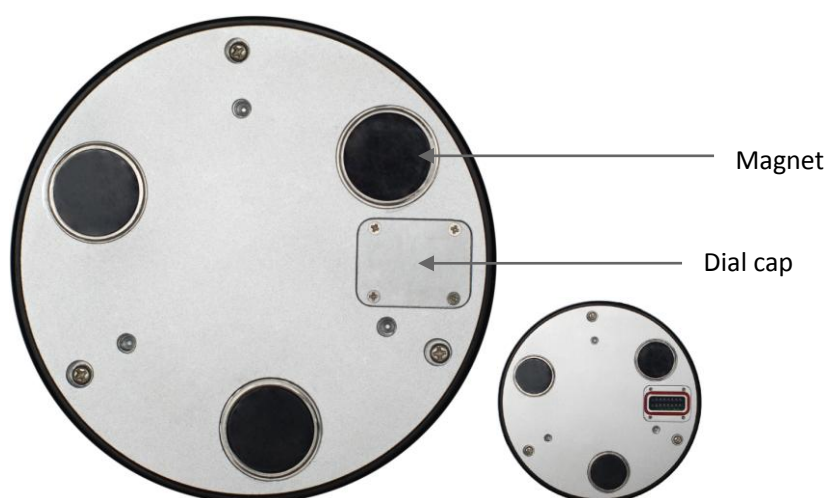
Only an outer command or power connection is required for that all domes circularly & horizontally scan within certain scope (55°~63° or specified angle) with a speed.

4. Installation and cable connection method

4.1 Dimension



4.2 Bottom plate structure



4.3 6-pin aviation plug & 6-pin cable

Pin definition for 6-pin aviation plug:

- Pin 1: VIDEO+
- Pin 2: VIDEO-
- Pin 3: B-, RS-485
- Pin 4: A+, RS-485
- Pin 5: GDN
- Pin 6: 12V, DC



4.4 Video, power, control line



4.5 Cable Connecting

Outer dome RS485 control line, video cord and power cord have been marked

- 6-pin aviation plug connecting to cable's 6-pin aviation plug
- RS485 control line connecting to keyboard controller and infrared controller, etc.
- Video cord connecting to displaying devices
- Power cord (note: DC12V) with aviation plug can connect to vehicle lighter in order to be powered by vehicle (Do care tags of cables or connectors, avoiding wrong match even burnt out).

4.6 Two methods for dome installation

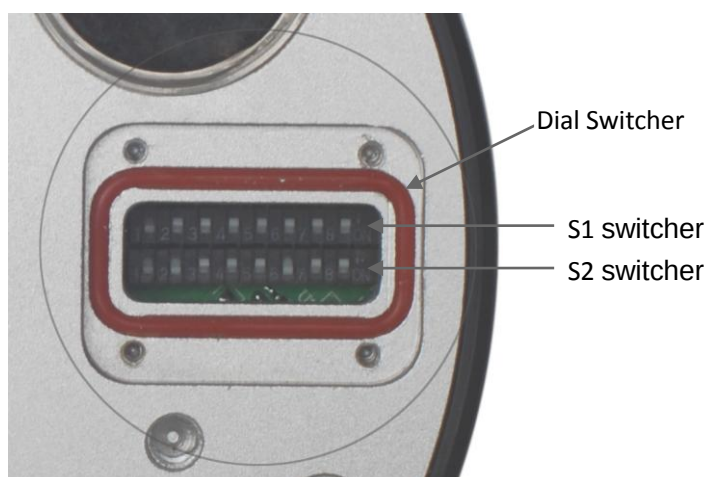
- Method 1: Suck dome onto vehicle roof by owned magnetic plate
- Method 2: Referring to the diagram of dome base board in chapter <4.1>, dig 3 holes on vehicle roof or other board for fixing dome, use three M5 screws mounting dome onto vehicle roof

Note: in fixing with screws, ensure that vehicle roof holes have been waterproofed well, avoiding rain water flows into the vehicle.

5. Dome Switcher Setting

Dome's own baud rate, communication protocol, address code, etc should comply with practical setting of customer operation (e.g. keyboard controller).

Two groups of switcher lie in movement board of dome, disassembling square-lid and manual setting (tweezers for better).



Switcher instruction:

- a) Pop-up: 1 (ON);
- b) Pop-down: 0 (OFF)

5.1 Vehicle dome address setting

Switcher S1 can encode dome address. Address setting adopts binary mode, supporting total 255 dome addresses. Details are in code chart. (Note: all factory codes are 1, but please set different address codes if there are 2 or more domes)

S1 switcher ID1-ID8 (4-digit binary)

Low				High			
1	2	3	4	5	6	7	8
ID1	ID2	ID3	ID4	ID5	ID6	ID7	ID8

Chart for Vehicle Dome Address Code: 1=ON; 0=OFF

Address Number	ID(S1) 12345678	Address Number	ID(S1) 12345678	Address Number	ID(S1) 12345678	Address Number	ID(S1) 12345678
1	10000000	33	10000100	65	10000010	97	10000110
2	01000000	34	01000100	66	01000010	98	01000110
3	11000000	35	11000100	67	11000010	99	11000110
4	00100000	36	00100100	68	00100010	100	00100110
5	10100000	37	10100100	69	10100010	101	10100110
6	01100000	38	01100100	70	01100010	102	01100110
7	11100000	39	11100100	71	11100010	103	11100110
8	00010000	40	00010100	72	00010010	104	00010110
9	10010000	41	10010100	73	10010010	105	10010110
10	01010000	42	01010100	74	01010010	106	01010110
11	11010000	43	11010100	75	11010010	107	11010110
12	00110000	44	00110100	76	00110010	108	00110110
13	10110000	45	10110100	77	10110010	109	10110110
14	01110000	46	01110100	78	01110010	110	01110110
15	11110000	47	11110100	79	11110010	111	11110110
16	00001000	48	00001100	80	00001010	112	00001110
17	10001000	49	10001100	81	10001010	113	10001110
18	01001000	50	01001100	82	01001010	114	01001110
19	11001000	51	11001100	83	11001010	115	11001110

20	00101000	52	00101100	84	00101010	116	00101110
21	10101000	53	10101100	85	10101010	117	10101110
22	01101000	54	01101100	86	01101010	118	01101110
23	11101000	55	11101100	87	11101010	119	11101110
24	00011000	56	00011100	88	00011010	120	00011110
25	10011000	57	10011100	89	10011010	121	10011110
26	01011000	58	01011100	90	01011010	122	01011110
27	11011000	59	11011100	91	11011010	123	11011110
28	00111000	60	00111100	92	00111010	124	00111110
29	10111000	61	10111100	93	10111010	125	10111110
30	01111000	62	01111100	94	01111010	126	01111110
31	11111000	63	11111100	95	11111010	127	11111110
32	00000100	64	00000010	96	00000110	128	00000001

129	10000001	161	10000101	193	10000011	225	10000111
130	01000001	162	01000101	194	01000011	226	01000111
131	11000001	163	11000101	195	11000011	227	11000111
132	00100001	164	00100101	196	00100011	228	00100111
133	10100001	165	10100101	197	10100011	229	10100111
134	01100001	166	01100101	198	01100011	230	01100111
135	11100001	167	11100101	199	11100011	231	11100111
136	00010001	168	00010101	200	00010011	232	00010111
137	10010001	169	10010101	201	10010011	233	10010111
138	01010001	170	01010101	202	01010011	234	01010111
139	11010001	171	11010101	203	11010011	235	11010111
140	00110001	172	00110101	204	00110011	236	00110111
141	10110001	173	10110101	205	10110011	237	10110111
142	01110001	174	01110101	206	01110011	238	01110111
143	11110001	175	11110101	207	11110011	239	11110111
144	00001001	176	00001101	208	00001011	240	00001111
145	10001001	177	10001101	209	10001011	241	10001111
146	01001001	178	01001101	210	01001011	242	01001111
147	11001001	179	11001101	211	11001011	243	11001111
148	00101001	180	00101101	212	00101011	244	00101111
149	10101001	181	10101101	213	10101011	245	10101111
150	01101001	182	01101101	214	01101011	246	01101111
151	11101001	183	11101101	215	11101011	247	11101111
152	00011001	184	00011101	216	00011011	248	00011111
153	10011001	185	10011101	217	10011011	249	10011111
154	01011001	186	01011101	218	01011011	250	01011111
155	11011001	187	11011101	219	11011011	251	11011111
156	00111001	188	00111101	220	00111011	252	00111111
157	10111001	189	10111101	221	10111011	253	10111111
158	01111001	190	01111101	222	01111011	254	01111111
159	11111001	191	11111101	223	11111011	255	11111111
160	00000101	192	00000011	224	00000111		

5.2 Communication protocol & baud rate setting

S2: Communication protocol & baud rate switcher

ID1-ID4: Communication protocol setting

ID5-ID8: Baud rate setting

Low				High			
1	2	3	4	5	6	7	8
ID1	ID2	ID3	ID4	ID5	ID6	ID7	ID8

5.2.1 Communication protocol setting

S2 switcher ID1-ID4 (4-digit binary)

1	2	3	4
ID1	ID2	ID3	ID4

Communication protocol setting: 1=ON; 0=OFF

Communication Protocol	ID(S2)
	1234
PELCO—P	0100
PELCO—D	1100
KALATEL	0010
VICON	1010
SAMSUNG	0110
AD	1110

E.g.:

Set PELCO—D: code value as 1100 means ID1 and ID2 are ON, but others are off

Set PELCO—P: code value as 0100 means ID2 is ON, but others are off

5.2.2 Baud rate setting

S2 switcher ID5-ID8 (4-digit binary)

5	6	7	8
ID5	ID6	ID7	ID8

1=ON; 0=OFF Baud rate setting: 1=ON; 0=OFF

Baud Rate	ID(S2)
	5678
1200	1000
2400	0100
4800	1100
9600	0010
19200	1010

E.g.:

Set baud rate as 2400 and code value as 0100: we only need dial ID6 as ON and others are off

Set baud rate as 9600 and code value as 0010: we only need dial ID7 as ON and others are off

Notes: factory codes are 1; protocols are PELCO-D; baud rates are 2400

6. Basic control for dome

6.1 Power connection self-test

After power connection, camera firstly begins auto horizontal rotation and vertical rotation, then zoom-in and zoom-out. This course verifies dome works normally.

Control camera rotation (up/down/left/right)

After selecting a camera, you can manually control dome rotation (up/down/left/right). Joystick action leads camera action, i.e. joystick directs right, camera directs right also; other direction (left/down/up/diagonal) actions are in the same method.

After selecting a camera, we can manually control dome rotation (up/down/left/right)

6.2 Preset setting

Set preset according to below:

- Selecting camera (details in keyboard instruction)
- Managing joystick, zoom key, focusing key and aperture key adjust picture of camera
- Digit key+ SET (input specified preset number)

6.3 Call preset

Call preset according to below:

- Selecting camera
- Press digit key+ CALL (input specified preset number), camera will promptly shift to preset position with auto changing of zoom, focusing and aperture
- If inputting special preset (details in preset chart), dome will start operation related to fixed-function camera (e.g. input #82 preset and camera will start auto tour).

Preset chart:

Preset Number	Function
55~63	#55~#63 presets circular scanning
82	Auto tour (#0~#54 presets orderly switch)
83	Auto adjust aperture
89	Delete all presets
91	Auto adjust focal length
94	Restart
96	180° zone scanning
97	360° zone scanning
98	90° zone scanning

7. Installation

Method 1: Place dome at vehicle roof, the 3 magnetic suckers on dome bottom will automatically stick to vehicle roof, especially never losing as vehicle running.

Method 2: Use three M5 screws fixing dome onto vehicle roof.

8. Cleaning

Use a dry, soft cloth to clean the camera shell when it is dirty. If very dirty, please use neutral detergent rather than strong detergent in order to taken not to scratch the dome when wiping it. Then use dry cloth wiping rest detergent.

Do not disassemble body by yourself!!!

Inner components must be repaired by technical staff rather than by yourself

9. Specifications

Model	BN-5606XCAR
Image Sensor	1/4" Ex-view HAD color CCD
Effective Pixel	752(H)×582(V)
Horizontal Resolution	480TV Lines
Min. Illumination	0.002Lux, 0Lux/IR
Optical Zoom	18X, f = 4.1~73.8mm (F 1.4 to 3.0)
Digital Zoom	12X
Min. Focal Length	35mm(wide), 800mm(Tele)
Horizontal Angle	48°(wide)~2.8°(Tele)
Scan System	2:1 interlace
Sync System	Internal sync / external sync (V-lock)
Focus System	Auto (sensitivity: normal, low), one-click auto focusing, manual, alternate AF, zoom activating AF
Gain Control	Auto / manual (-3~28dB, 2dB stepping)
White Balance	Auto, ATW (auto tracking white), indoor, outdoor, one-click, manual
AE Control	Auto, manual, priority mode, brightness, EV compensation, backlight compensation
WDR	No
Backlight Compensation	On/off
Electronic Shutter	1/1~1/10, 000s, 22 levels
External Control	VISCA (TTL signal level), baud rate: 9.6Kb/s, 19.2Kb/s, 38.4Kb/s, 1 or 2 stop position optional
Privacy Mask	On/Off (24 zones)
Picture Feature	Electronic flip, reversal effect, black & white, mirror effect
Character generator	Mode display, time display, title display
Flicker Elimination	No
Video Output	CVBS: 1.0Vp-p/75 ohms
S/N Ratio	≥50dB
Horizontal Speed	0.05°~100°/s

Vertical Speed	0.03°~30°/s
Pan Travel	360° continuous flip
Tilt travel	-15°~90° (180° auto flip)
Address Code	0~255
Preset Position	64
Auto Tour	#0~#54 presets orderly switch
Control Mode	RS485
Baud Rate	1200 bps/2400 bps/4800 bps/9600 bps/19200 bps
Address Code Range	0~255
Input Voltage	DC12V
Power Consumption	15W
Dimension	130×163mm(Φ×H)
Weight	1.2kg
Operating Temperature	-25°C~70°C
Relative Humidity	5%~90%

Appendix: Simple faults solving

Fault description	Possible reasons	Solutions
Powered-on, no action, no picture	Power supply fault	Solve fault of power supply
Powered-on, normal self-test, normal picture but fail to control	Wrong settings of address code, control protocol and baud rate	Change address code, control protocol and baud rate
	RS-485 line wrong connecting or breaking off	Check RS-485 control line

Notes: For seldom vehicle power sockets (lighter socket) are DC 24V and improper voltage will damage camera greatly, please ensure power socket (lighter socket) voltage is DC 12V.